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PTO/SB/21 (08-03)

Approved for use through 08/30/2003. OMB 0651-0031

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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<b>TRANSMITTAL FORM</b>  (to be used for all correspondence after initial filing)	Application Number	10/614,335
	Filing Date	July 7, 2003
	First Named Inventor	James David Keeler et al.
	Art Unit	2121
	Examiner Name	George B. Davis
Total Number of Pages in This Submission	Attorney Docket Number	PAVI-26,470

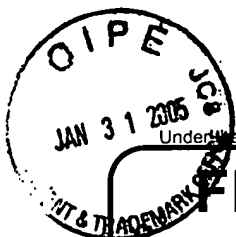
ENCLOSURES (Check all that apply)		
<input checked="" type="checkbox"/> Fee Transmittal Form	<input type="checkbox"/> Drawing(s)	<input type="checkbox"/> After Allowance communication to Technology Center (TC)
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<input type="checkbox"/> Response to Missing Parts under 37 CFR 1.52 or 1.53		

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Firm or Individual name	HOWISON & ARNOTT, L.L.P. Gregory M. Howison, Reg. No. 30,646
Signature	
Date	1/28/05

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# FEE TRANSMITTAL for FY 2005

Effective 10/01/2004. Patent fees are subject to annual revision.

☐ Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT (\$ ) 180.00

## Complete if Known

Application Number 10/614,335  
Filing Date July 7, 2003  
First Named Inventor Keeler et al.  
Examiner Name George B. Davis  
Art Unit 2121  
Attorney Docket No. PAVI-26,470

## METHOD OF PAYMENT (check all that apply)

☒ Check ☐ Credit card ☐ Money Order ☐ Other ☐ None

☒ Deposit Account:

Deposit  
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20-0780/PAVI-26,470

HOWISON & ARNOTT, L.L.P.

The Director is authorized to: (check all that apply)

☐ Charge fee(s) indicated below ☒ Credit any overpayments

☒ Charge any additional fee(s) or any underpayment of fee(s)

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## FEE CALCULATION

### 1. BASIC FILING FEE

Large Entity		Small Entity		Fee Description	Fee Paid
Fee Code	Fee (\$)	Fee Code	Fee (\$)		
1001	790	2001	395	Utility filing fee	
1002	350	2002	175	Design filing fee	
1003	550	2003	275	Plant filing fee	
1004	790	2004	395	Reissue filing fee	
1005	160	2005	80	Provisional filing fee	
SUBTOTAL (1)					(\$ )

### 2. EXTRA CLAIM FEES FOR UTILITY AND REISSUE

		Extra Claims		Fee from below		Fee Paid
Total Claims	<input type="text"/>	-20** =	<input type="text"/>	X	<input type="text"/>	= <input type="text"/>
Independent Claims	<input type="text"/>	- 3** =	<input type="text"/>	X	<input type="text"/>	= <input type="text"/>
Multiple Dependent					<input type="text"/>	= <input type="text"/>

Large Entity		Small Entity		Fee Description
Fee Code	Fee (\$)	Fee Code	Fee (\$)	
1202	18	2202	9	Claims in excess of 20
1201	88	2201	44	Independent claims in excess of 3
1203	300	2203	150	Multiple dependent claim, if not paid
1204	88	2204	44	** Reissue independent claims over original patent
1205	18	2205	9	** Reissue claims in excess of 20 and over original patent

SUBTOTAL (2) (\$ )

\*\*or number previously paid, if greater; For Reissues, see above

## FEE CALCULATION (continued)

### 3. ADDITIONAL FEES

Large Entity Small Entity

Fee Code	Fee (\$)	Fee Code	Fee (\$)	Fee Description	Fee Paid
1051	130	2051	65	Surcharge - late filing fee or oath	
1052	50	2052	25	Surcharge - late provisional filing fee or cover sheet	
1053	130	1053	130	Non-English specification	
1812	2,520	1812	2,520	For filing a request for <i>ex parte</i> reexamination	
1804	920*	1804	920*	Requesting publication of SIR prior to Examiner action	
1805	1,840*	1805	1,840*	Requesting publication of SIR after Examiner action	
1251	110	2251	55	Extension for reply within first month	
1252	430	2252	215	Extension for reply within second month	
1253	980	2253	490	Extension for reply within third month	
1254	1,530	2254	765	Extension for reply within fourth month	
1255	2,080	2255	1,040	Extension for reply within fifth month	
1401	340	2401	170	Notice of Appeal	
1402	340	2402	170	Filing a brief in support of an appeal	
1403	300	2403	150	Request for oral hearing	
1451	1,510	1451	1,510	Petition to institute a public use proceeding	
1452	110	2452	55	Petition to revive - unavoidable	
1453	1,370	2453	685	Petition to revive - unintentional	
1501	1,370	2501	685	Utility issue fee (or reissue)	
1502	490	2502	245	Design issue fee	
1503	660	2503	330	Plant issue fee	
1460	130	1460	130	Petitions to the Commissioner	
1807	50	1807	50	Processing fee under 37 CFR 1.17(q)	
1806	180	1806	180	Submission of Information Disclosure Stmt	180.00
8021	40	8021	40	Recording each patent assignment per property (times number of properties)	
1809	790	2809	395	Filing a submission after final rejection (37 CFR 1.129(a))	
1810	790	2810	395	For each additional invention to be examined (37 CFR 1.129(b))	
1801	790	2801	395	Request for Continued Examination (RCE)	
1802	900	1802	900	Request for expedited examination of a design application	

Other fee (specify)

\*Reduced by Basic Filing Fee Paid

SUBTOTAL (3) (\$ ) 180.00

## SUBMITTED BY

Name (Print/Type) Gregory M. Howison

Registration No. 30,646  
(Attorney/Agent)

(Complete if applicable)

Telephone 972-680-6050

Signature

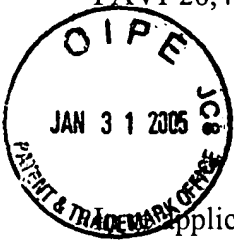
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## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application of: James D. Keeler, Eric J. Hartman and Ralph B. Ferguson  
 Serial No.: 10/614,335  
 Filed: July 7, 2003  
 Group: 2121  
 Examiner: George B. Davis  
 For: METHOD AND APPARATUS FOR OPERATING A NEURAL NETWORK WITH MISSING AND/OR INCOMPLETE DATA

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(Date of Deposit)

Gregory M. Howison

(Name of Person Mailing Document)

(Signature)

1/28/05

(Date of Signature)

02/03/2005 WASFAW1 00000019 10614335

01 FC:1806

180.00 OP

### INFORMATION DISCLOSURE STATEMENT

In accordance with the requirements of 37 C.F.R. §§ 1.56, 1.97, and 1.98, attached please find a Form PTO SB/08 listing information for consideration by the Office in connection with its examination of the above-captioned patent application. A copy of each listed non-US document is enclosed herewith.

This information disclosure statement is being filed after the period specified in paragraph (b) of §1.97, but before the mailing date of either a final action under §1.113, or a notice of allowance under §1.311. Therefore, pursuant to §1.97(c)(2), this information disclosure statement is accompanied by the fee set forth in §1.17(p).

INFORMATION DISCLOSURE STATEMENT

Serial No. 10/614,335

Page 1 of 2

It is brought to Examiner's attention that the references listed on the attached Form PTO SB/08 were previously submitted to the Office in connection with a prior application, namely Application Serial No. 10/040,085, which is relied upon in the current application for an earlier filing date under 35 U.S.C. §120. Pursuant to 37 C.F.R. 1.98(d), copies of such previously submitted items are not provided herein.

Applicants request that this information disclosure statement be considered and that a copy of the Form PTO SB/08 be returned to the undersigned indicating the consideration of each document listed.

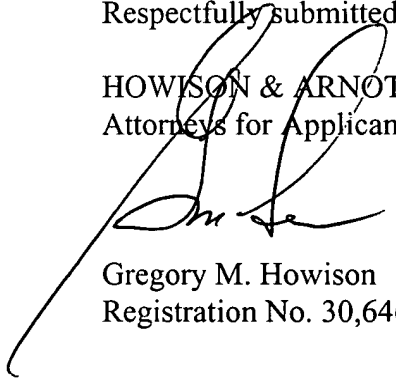
### REMARKS

Applicants submit that no representation is made, and no representation is intended, that more relevant material does not exist, or that the order of presentation of these materials in any way reflects their relevant pertinence. The listing on the attached Form PTO SB/08 is not intended to constitute an admission of any kind. Specifically, this presentation is not an admission that any of the items listed are properly citable against the above-identified application as prior art. Applicants respectfully submit that their invention is patentable over the enclosed documents listed on Form PTO SB/08.

Please charge any necessary fees or deficiencies in fees necessary for the filing of this paper or credit any overpayment to Deposit Account No. 20-0780/PAVI-26,470 of HOWISON & ARNOTT, L.L.P.

Respectfully submitted,

HOWISON & ARNOTT, L.L.P.  
Attorneys for Applicants



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GMH/yoc

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January 28, 2005

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PTO/SB/08A (08-00)

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Substitute for form 1449A/PTO

# INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(use as many sheets as necessary)

Sheet 1 of 4

## Complete if Known

Application Number 10/614,335  
Filing Date July 7, 2003  
First Named Inventor Keeler et al.  
Group Art Unit 2121  
Examiner Name George B. Davis  
Attorney Docket Number PAVI-26,470

## U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No. <sup>1</sup>	U.S. Patent Document		Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number	Kind Code <sup>2</sup> (if known)			
	1	4,802,103		Faggin et al.	01/1989	
	2	4,813,077		Woods et al.	03/1989	
	3	4,872,122		Altschuler et al.	01/1989	
	4	4,910,691		Skeirik	03/1990	
	5	4,965,742		Skeirik	10/1990	
	6	5,006,992		Skeirik	04/1991	
	7	5,052,043		Gaborski	09/1991	
	8	5,081,651		Kubo	01/1992	
	9	5,111,531		Grayson et al.	05/1992	
	10	5,113,483		Keeler et al.	05/1992	
	11	5,121,467		Skeirik	06/1992	
	12	5,140,523		Frankel et al.	08/1992	
	13	5,150,313		van den Engh et al.	09/1992	
	14	5,175,797		Funabashi et al.	12/1992	
	15	5,255,347		Matsuba et al.	10/1993	
	16	5,276,771		Manukian et al.	01/1994	
	17	5,335,291		Kramer et al.	08/1994	
	18	5,353,207		Keeler et al.	10/1994	
	19	5,402,519		Inoue et al.	03/1995	
	20	5,444,820		Tzes et al.	08/1995	

## FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No. <sup>1</sup>	Foreign Patent Document			Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T <sup>6</sup>
		Office <sup>3</sup>	Number <sup>4</sup>	Kind Code <sup>5</sup> (if known)				
	1	EP	0262647	A3	Toshiba	04-06-1988		
	2	EP	0327268	A2	AT&T	08-09-1989		
	3	EP	0436916	A2	Motorola Inc.	07-17-1991		
	4	WO	94/17489		Pavilion Technologies, Inc.	08-04-1994		
	5	WO	94/12948		Pavilion Technologies, Inc.	06-09-1994		
	6	WO	94/17482		Pavilion Technologies, Inc.	08-04-1994		

Examiner  
Signature

Date  
Considered

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup> Unique citation designation number. <sup>2</sup> See attached Kinds of U.S. Patent Documents. <sup>3</sup> Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>4</sup> For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>5</sup> Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. <sup>6</sup> Applicant is to place a check mark here if English language Translation is attached.

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<p>Substitute for form 1449A/PTO</p> <h2 style="margin: 0;">INFORMATION DISCLOSURE STATEMENT BY APPLICANT</h2> <p style="margin: 0;">(use as many sheets as necessary)</p>		<p><b>Complete if Known</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"><tr><td style="width: 50%;">Application Number</td><td style="width: 50%;">10/614,335</td></tr><tr><td>Filing Date</td><td>July 7, 2003</td></tr><tr><td>First Named Inventor</td><td>Keeler et al.</td></tr><tr><td>Group Art Unit</td><td>2121</td></tr><tr><td>Examiner Name</td><td>George B. Davis</td></tr><tr><td>Attorney Docket Number</td><td>PAVI-26,470</td></tr></table>		Application Number	10/614,335	Filing Date	July 7, 2003	First Named Inventor	Keeler et al.	Group Art Unit	2121	Examiner Name	George B. Davis	Attorney Docket Number	PAVI-26,470
Application Number	10/614,335														
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Examiner Name	George B. Davis														
Attorney Docket Number	PAVI-26,470														
Sheet	2	of	4												

U.S. PATENT DOCUMENTS						
Examiner Initials*	Cite No. <sup>1</sup>	U.S. Patent Document		Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number	Kind Code <sup>2</sup> (if known)			
	21	5,461,699		Arababi et al.	10/1995	
	22	5,467,428		Ulug	11/1995	
	23	5,479,573		Keeler et al.	12/1995	
	24	5,559,690		Keeler et al.	09/1996	
	25	5,581,459		Enbutsu et al.	12/1996	
	26	5,613,041		Keeler et al.	03/1997	
	27	5,659,667		Buescher et al.	08/1997	
	28	5,704,011		Hensen et al.	12/1997	
	29	5,720,003		Chiang et al.	02/1998	
	30	5,729,661		Keeler et al.	03/1998	
	31	5,819,006		Keeler et al.	10/1998	
	32	6,002,839		Keeler et al.	12/1999	
	33	6,169,980		Keeler et al.	01/2001	
	34	6,314,414		Keeler et al.	11/2001	
	35	6,613,041		Keeler et al.	03/1997	
	36	6,591,254		Keeler et al.	07/08/2003	

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Examiner Initials*	Cite No. <sup>1</sup>	Foreign Patent Document			Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T <sup>6</sup>
		Office <sup>3</sup>	Number <sup>4</sup>	Kind Code <sup>5</sup> (if known)				

Examiner Signature		Date Considered	
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<sup>1</sup> Unique citation designation number. <sup>2</sup> See attached Kinds of U.S. Patent Documents. <sup>3</sup> Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>4</sup> For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>5</sup> Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. <sup>6</sup> Applicant is to place a check mark here if English language Translation is attached.

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Substitute for form 1449B/PTO  <h2 style="text-align: center;">INFORMATION DISCLOSURE STATEMENT BY APPLICANT</h2> <p style="text-align: center;"><i>(use as many sheets as necessary)</i></p>		<b>Complete if Known</b>	
		Application Number	10/614,335
		Filing Date	July 7, 2003
		First Named Inventor	Keeler et al.
		Group Art Unit	2121
		Examiner Name	George B. Davis
		Attorney Docket Number	PAVI-26,470
Sheet	3	of	4

OTHER PRIOR ART – NON PATENT LITERATURE DOCUMENTS			
Examiner Initials <sup>1</sup>	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T <sup>2</sup>
	1	PHOHA, SHASHI; "Using the National Information Infrastructure (NII) for Monitoring, Diagnostics and Prognostics of Operating Machinery," IEEE Proceedings of the 35th Conference on Decision and Control, Kobe, Japan, pp. 2583-2587, Dec. 1996.	
	2	HARTMAN, ERIC J., KEELER JAMES D., KOWALSKI, JACEK M.; "Layered Neural Networks with Gaussian Hidden Units as Universal Approximations," Neural Computation 2, 1990, Massachusetts Institute of Technology, pp. 210-215.	
	3	HARTMAN, ERIC, KEELER, JAMES D.; "Predicting the Future: Advantages of Semilocal Units," Neural Computation 3, 1991, Massachusetts Institute of Technology, pp. 566-578.	
	4	PRESS, WILLIAM H., FLANNERY, BRIAN P., TEUKOLSKY, SAUL A., VETTERLING, WILLIAM T.; Numerical Recipes: The Art of Scientific Computing, 1986, ch. 3, "Interpolation and Extrapolation," pp. 77-101.	
	5	SERTH, R.W., HEENAN, W. A.; "Gross Error Detection and Data Reconciliation in Steam-Metering Systems," AIChE Journal, vol. 32, No. 5, May 1986, pp. 733-742.	
	6	MYUNG-SUB ROH et al.; Thermal Power Prediction of Nuclear Power Plant Using Neural Network and Parity Space Model, IEEE Transactions on Nuclear Science, vol. 38, no. 2, Apr. 1991, pp. 866-72.	
	7	AUTERE, ANTTI; On Correcting Systematic Errors Without Analyzing Them by Performing a Repetitive Task, IEEE / RSI International Workshop on Intelligent Robots and Systems IROS '91, Nov. 3-5, 1991, pp. 472-7.	
	8	KIMOTO, TAKASHI et al.; Stock Market Prediction System with Modular Neural Networks, IEEE, Jun. 1990, pp. I-1 to I-6.	
	9	DORRONSORO ET AL.; "Neural Fraud Detection in Credit Card Operations," IEEE Transactions on Neural Networks, VOL. 8, NO. 4, Jul. 1997, PP. 827-34.	

Examiner Signature		Date Considered	
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		Group Art Unit	2121
		Examiner Name	George B. Davis
Sheet	4	Attorney Docket Number	PAVI-26,470
	of 4		

OTHER PRIOR ART – NON PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T <sup>2</sup>
	10	SPENCELEY, S.E., WARREN, J.R.; "The Intelligent Interface for Online Electronic Medical Records Using Temporal Data Mining," IEEE Xplore, Proceedings of the 31st Annual Hawaii, International Conference on System Sciences. Jan. 1998, pp. 266-745.	
	11	KOUTSOUGERAS; "A feedforward neural network classifier model: multiple classes, confidence output values, and implementation," International Journal of Pattern Recognition and Artificial Intelligence Ed. World Scientific Publishing Co., October 1992, vol. 6, no. 4, pp. 539-569.	
	12	LAPEDES, ALAN, FARBER, ROBERT; "How Neural Nets Work," American Inst. of Physics, 1988, pp. 442-457.	
	13	WEIGEND, ANDREAS S., HUBERMAN, BERNARDO A., RUMELHART, DAVID E; "Predicting the Future: A Connectinist Approach," Stanford University, Stanford-PDP-90-01/PARC-SSL-90-20, Apr. 1990.	
	14	RUMELHART, D.E., HINTON, G.E., WILLIAMS. R.J.; "Learning Internal Representations by error Propagation," Parallel Distributed Processing, vol. 1, 1986.	
	15	RANDER, P.W., UNNIKRIISHNAN, K.P.; "Learning the Time-Delay Characteristics in a Neural Network," ICAAADDP-92-IEEE International Conference on Acoustics, Speech and Signal Processing, Mar. 23, 1992, vol. 2, pp. 285-288.	
	16	TAM, DAVID C., PERKEL, DONALD H.; "A Model for Temporal Correlation of biological Neuronal Spike Trains," IJCNN Int. Joint Conference of Neural Networks, Dept. of Physiology and Biophysics, University of California, pp. I-781 - I-786.	
	17	LEVIN, ESTHER, GEWIRTZMAN, RAANAN, INBAR, GIDEON F.; "Neural Network Architecture for Adaptive System Modeling and Control," Neural Networks, 4(1991) No. 2, pp. 185-191.	
	18	TROUDET, T., GARG, S., MATTERN, D. MERRILL, W.; "Towards Practical Control Design Using Neural Computation," ICJNN-91-Seattle--International Joint Conference on Neural Networks, vol. 2, pp. 675-681, Jul 8, 1991.	
	19	BEERHOLD, J.R., JANSEN, M., ECKMILLER, R.; "Pulse-Processing Neural Net Hardware with Selectable Topology and Adaptive Weights and Delays," IJCNN International Joint Conference on Neural Networks, Jun. 17, 1990, vol. 2, pp. 569-574.	
	20	HAFFNER, PATRICK, FRANZINI, MICHAEL, WAIBEL, ALEX; "Integrating Time Alignment and Neural Networks for High performance Continuous Speech Recognition," ICASSP 91, sponsored by The Inst. of electrical and Electronics Engineers, Signal Processing Society, 1991 Int. Conf. on Acoustics, Speech and Signal Processing, May 14-17, 1991, pp. 105-108.	

Examiner Signature		Date Considered	
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\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup> Unique citation designation number. <sup>2</sup> Applicant is to place a check mark here if English language Translation is attached.

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